

A NEW COMBINATION FOR VERNONIA LIBERTADENSIS S. B. JONES.
WITH NOTES AND DESCRIPTIONS OF ADDITIONAL
ANDEAN SPECIES OF BACCHARIS

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Summary

Vernonia libertadensis S. B. Jones of Peru, proves to be an otherwise undescribed species of Baccharis, and a transfer is made. A key is provided to distinguish the species from some relatives. The error is indirectly traced to overly broad and superficial generic concepts that do not force taxonomists to look carefully enough at their material. The failure to make standard use of pollen in the Vernonieae is particularly emphasized. Also, two new species, B. buchtienii and B. solomonii are described from Bolivia.

A recent attempt to more closely define subgroups in the tribe Vernonieae encountered a problem in placement of Vernonia libertadensis S. B. Jones. Shortly after the description of the species (Jones 1980), a specimen in the U. S. National Herbarium with nearly the same collection data as the type had been observed briefly and placed under the name. It was only recently, when an attempt was made to check the pollen type, that the plant was placed under a dissecting microscope. The heads were seen to have only female flowers, and the plant was recognized as a Baccharis. The initial identification as V. libertadensis was placed in doubt, but the type, kindly sent by the University of Georgia Herbarium, has now been seen, and it is also a female plant of the same species.

The two specimens of the Jones (1980) species do superficially resemble Vernonia, especially some of the Brazilian species known as section Macrocephalae. The few, large, shortly pedunculate heads are certainly unlike most species of Baccharis, and it is not surprising that both the US and GA specimens came from the collector annotated as Vernonia. The similarity is strong enough that the production of the description by Jones seems to have included only one error, the designation of the corollas as reddish-purple. The error apparently traced wholly to the conviction that the plant was a Vernonia, since there is no other basis for such a statement. Labels on both collections indicate that the flowers are whitish.

Observations on the sources of the error.

Obviously, botanists do not want to describe new species in tribes or subfamilies to which they do not belong. More attention to micro-characters in descriptions, and narrower generic concepts that are properly definitive will help prevent similar errors in studies of the Asteraceae in the future.

Micro-characters have been used since early in the 19th century as a basis for tribal concepts (Cassini 1819) and have remained theoretically in force since that time, although they are usually ignored in practice. It hardly needs to be said that the practice of ignoring such characters in descriptions of new species and genera needs to change. In the case of the Vernonieae, one micro-character is particularly important. Pollen has been used in the taxonomy of the tribe since the time of Steetz (1864) and was mentioned under two genera by Bentham in Bentham and Hooker (1873). Pollen has continued to be useful in the tribe, as shown by Stix (1960), and Jones has himself (Keeley & Jones 1977; Jones 1979, 1981) championed the use of pollen in the tribe. My personal belief is that today no new species in the Vernonieae should be published without describing the pollen type, which can easily be done with the light microscope. If Jones had maintained that standard when describing *V. libertadensis*, he would certainly have noted that the flowers in the heads were female with naturally limbless corollas and no anthers. Examination of microcharacters of *V. libertadensis* would also have undoubtedly revealed such subfamilial features of the new species as the lack of calcarate bases on the anther thecae and the presence of separate stigmatic lines on the papillose (non-hirsute) style branches.

There are many generalizations that can be made in regard to broad generic concepts. Fault can be always be found with the perpetuation of garbage pit taxa that have become traditional in many plant groups. In these cases the conflict is not between broad versus narrow concepts, since the broad concepts are not genera at all. However, the case at hand is more subtle. Dr. Jones does not believe *Baccharis* and *Vernonia* are congeneric any more than I do. The fault is a generic concept of *Vernonia* that is so useless that it never focuses the attention of the taxonomist on any character that would distinguish *Vernonia* from *Baccharis*. Even the minimal narrowing of the concept to exclude the Paleotropical *Distephanus* (Robinson & Kahn 1986) might have focused attention on the trinervate leaves of the new species, a feature unknown in the Vernonieae outside of *Distephanus*. It is true that broad generic concepts can include useful definable taxa at less than the generic level, and Dr. Jones cannot be faulted for the having no subgeneric concept (1979, 1981). However, Jones' failure to apply any subgeneric concepts to his new species is an excellent example of how seldom such concepts tend to be applied in practice.

In summary, very broad generic concepts, as they are applied

by most botanists, are scarcely the noble constructs they are claimed to be. On the contrary, broad generic concepts seem most often to be the handmaidens of superficial and careless taxonomy.

The disposition of Vernonia libertadensis.

Once the proper comparison is made, V. libertadensis falls easily within Baccharis in spite of its large heads. Relationship seems closest to other species with individual heads borne on short peduncles on the ends of branches. Some such species in Bolivia and southward include B. ulicina Hook. & Arn. with its pinnately divided leaves, and B. heterothalmoides Britt., with its linear leaves. The species of the group occurring in northern Peru seem of special interest, and five of the species are distinguished by the following key. The key is based primarily on female plants, but should also work for male plants of B. libertadensis when they are discovered.

1. Heads borne on slender branching peduncles, containing 6-30 flowers 2
2. Leaves linear, ca. 1 mm wide, with entire margins; heads with 6-10 flowers B. hutchisonii
2. Leaves narrowly elliptical, 2-6 mm wide, usually with few to many serrulations; heads usually with 20-30 flowers B. sternbergiana
1. Heads borne on stout unbranched peduncles, containing 40-90 flowers 3
3. Leaves distorted when dried, oblanceolate, widest well above the middle; heads with pappus mostly exerted beyond the involucre; the involucre bracts narrowly oblong to lanceolate with narrowly obtuse tips B. frigida
3. Leaves not distorted when dried, usually erect and imbricate, mostly elliptical, widest at or slightly above the middle; heads with less than half the length of the pappus exerted beyond the involucre at maturity; the involucre bracts with narrowly acute or broadly rounded tips 4
4. Leaves with few to many distinct teeth on upper margin, tips often recurving when dry, apiculus present, basal margins straight or slightly concave, secondary veins not prominulous; heads with involucre bracts lanceolate, bracts with acute and often twisted tips B. uniflora
4. Leaves with entire margins, tips not recurving when dry, apiculus absent, basal margins slightly bulging, veins

slightly prominulous; heads with involuclral bracts broadly oblong, bracts with broadly rounded and undistorted tips .

B. libertadensis

Baccharis frigida H.B.K., Nov. Gen. Sp., ed. fol. 4: 38. 1818.

The species was originally cited from Peru with a collection date of Sept. 1802. No more recent specimens had been seen by the present author or by Dr. Cuatrecasas until the 1987 collection by Becker & Terrones 1685 cited from Depart. Cajamarca, surroundings of Cajamarca, alt. 2700-3700 m (US).

Baccharis hutchchisonii Cuatr., Caldesia 10: 25. 1967.

The species seems most like B. heterothalmoides of Bolivia but differs by having granular pubescence rather than being glabrous. All collections known thus far are from Cajamarca: Celedin. Hutchison & Wright 5173 (Holotype: US); King & Bishop 9129 (US); Becker 1282 (US).

Baccharis libertadensis (S. B. Jones) H. Robinson, comb. nov.

Vernonia libertadensis S. B. Jones, Fieldiana, Botany, n. ser. 5: 31. 1980. PERU: Libertad: Prov. Otuzco. Cerro Sango (Motil-Shorey, 3300-3400 m.s.m. Borde do camino. Flores blancas. 7 Julio 1953. A. Lopez 1947 (holotype, GA); same data, Lopez 0971 (US).

Plants shrubby, available stem segments ca. 30 cm long, distally with numerous ascending branches; stems brownish, ca. 10-striate, densely glanduliferous with sessile glands. Leaves densely spirally inserted, sessile; blades oblong-elliptical 1.6-2.5 cm long and 0.5-0.8 cm wide, margins entire, basal margin slightly convex, apex shortly acute, longitudinally 3-5-nervate from the base, surfaces densely impressed-glandular-punctate, nerves slightly prominulous. Inflorescence diffuse at ends of leafy branches, pedicels 2-3 mm long. Heads broadly campanulate, ca. 14 mm tall and 12-13 mm broad; involuclral bracts ca. 60 in ca. 5 series, bracts oblong, ca. 4-9 mm long and 1.5-2.5 mm wide, apices rounded, margins narrowly scarious and distally with minute fringe of minute hairs, outer surfaces with broadly indurated and glanduliferous shield. Female heads with 80-90 flowers, corollas whitish, ca. 5.5 mm long, narrowly tubular, style branches tapering to slender attenuate tips. Achenes ca. 2 mm long, narrowly prismatic, 5-ribbed, basally with numerous short glandular hairs, upper half sparsely and minutely puberulous; pappus with ca. 30 setae, mostly ca. 7 mm long, tips slightly broadened and flexuous. Male heads unknown.

In spite of the rather accidental nature of the original description in the wrong genus, the species does not match any previously known member of Baccharis. The narrow endemism and the resemblance to Vernonia undoubtedly contributed to the lack of previous description of the species in Baccharis.

Baccharis sternbergiana Steud., Nom. Bot., ed. 2, 1: 179. 1840.

The name was based on Baccharis semiserrata DC., Prod. 5: 419. 1836, non B. semiserrata DC., Prod. 5: 404. 1936. The species is most common in central and southern Peru, but the range extends northward into the Departments of La Libertad, Cajamarca, and Amazonas, and southward into Bolivia.

Baccharis uniflora (Ruiz & Pavon) Pers., Syn. Plant. 2: 425. 1807.

Molina uniflora Ruiz & Pavon, Syst. Veget. 208. 1798. The species has been best known under the name Baccharis grindeliaefolia Wedd. For details of the reduction of the latter to synonymy see Cuatrecasas (1981). The species occurs in Peru as far north as the Departments of La Libertad and Ancash and as far south as Cuzco. In aspect the species is closest to B. libertadensis, but it differs by the more narrowly based leaves with toothed margins and reflexed, apiculate tips. The heads are generally smaller, and the involucral bracts are lanceolate with narrow tips.

New species from Bolivia and southern Peru

A large series of Bolivian Astereae sent by the Missouri Botanical Garden contains the following two species in need of description. The Solomon and D'Arcy collections cited are duplicated at MO.

Baccharus buchtienii H. Robinson, sp. nov.

Plantae frutescentes ca. 2 m altae mediocriter ramosae. Caules viridi-brunnescentes subteretes in lineis prominulis decurrentibus subalatae. Folia alterna, petiolis plerumque 5-10 mm longis in nervis supra et subtus prominentibus anguste alatis; laminae subcoriaceae ellipticae vel late ellipticae 3-10 cm longae et 2.5-4.5 cm latae base cuneatae sensim anguste acuminatae margine superne antrorse remote serratae apice breviter acutae apiculatae supra et subtus glabrae obscure glandulo-punctatae interdum viscosae, nervis primariis supra exsculptis inferne prominentibus, nervis secundariis pinnatis utrinque ca. 7-10 erecto-patentibus, nervulis vix prominulis. Inflorescentiae in ramis terminales late corymboso-paniculatae, ramis primariis bracteiferis, bracteis foliiformibus in laminis ca. 1-2 cm longis, ramulis ultimis plerumque 2-5 mm longis glabris glanduliferis. Capitula feminea late campanulata ca. 8-10 mm alta et 6 mm lata; squamae involucri ca. 40 ca. 5-seriatae graduatae exteriores late ovatae vel suborbiculares ca. 2.5 mm longae et latae interiores sensim longiores et angustiores ovatae vel lanceolatae ad 5 mm longae et 1 mm latae apice obtusae vel subrotundatae margine anguste scariscae minute dense puberulo-fimbriatae extus glabrae et glanduliferae; flores ca. 80 in capitulo; corollae albae anguste tubulares ca. 3 mm longae glabrae; achenia ca. 1.5 mm longa leniter curvata prismatica 5-7-costata glabra; setae

pappae ca. 40 persistentes ca. 5 mm longae tenuibus subbiseriatae demum latae patentes et recurvatae. Capitula masculina latae campanulata 8-9 mm alta et 5-6 mm lata; squamae involucris ca. 30 ca. 4-seriatae graduatae exteriores ovatae ca. 2.0 mm longae et 1.5 mm latae interiores sensim lanceolatae vel lineares angustiores ad 4 mm longae et 1 mm latae apicae obtusae margine vix scariosae minute dense puberulo-fimbriatae extus glabrae et glanduliferae; flores ca. 40-50 in capitulo; corollae albae ca. 5.5 mm longae, tubis angustis ca. 4 mm longis minute sparse glanduliferis superne sensim dense minute puberulis, faucibus subnullis 0.2-0.3 mm longis, lobis lanceolatis ca. 1.5 mm longis et base ca. 0.35 mm latis extus glabris; thecae ca. 1.2 mm longae; appendices antherarum lanceolatae ca. 0.4 mm longae base ca. 0.12 mm latae; achaenia prismatica ca. 0.7 mm longa; setae pappi subdeciduae ca. 30 ca. 5 mm longae inferne remote scabridae superne distincte latiores margine dense scabrae. Grana pollinis in diametro ca. 25 μ m.

TYPE: BOLIVIA: La Paz: Unduavi. Nordyungas. 3250 m. Oct. 1931. Male plant. Buchtien 9082 (Holotype US). PARATYPES: BOLIVIA: Unduavi. Nordyungas. 3250 m. Oct. 1931. Female plant. Buchtien 9080 (US); Nor Yungas, 1.6 km below Chuspipata on old road. Abandoned railroad cut and surrounding area. Cloud forest dominated by Brunellia, Weinmannia and Chusquea. elev. 3100 m. 16° 18'S, 67° 48'W. Flowers white, shrub ca. 1.5 m, foliage resinous. Male. 10 Aug. 1981. Solomon 6012 (US); Flowers white, shrub ca. 1 m. Female. 10 Aug. 1981. Solomon 6013 (US); Prov. Nor Yungas, 3 km below Chuspipata on old road. Moist forest below cloud forest. ca. 2900 m. 16° 18'S, 67° 48'W. Female. 10 Aug. 1981. Solomon 6049 (US); Nor Yungas. 2.2 km NE (below) Chispipata. Cloud forest with tree ferns. Extremely steep slopes. 16° 17'S, 67° 49'W; elev. 3000 m. Shrub 1 m. Corollas white. Male. 24 March 1982. Solomon 7283 (US); 13.2 km NE (below) Chuspipata (16.5 km S of Yolosa). 16° 16'S, 67° 47'W, elev. 2150 m. Shrub 1 m. Corollas white. Male. 19 July 1982. Solomon 8084 (US); 1.4 km SE of Chuspipata, on road to Chulumani. 16° 18'S, 67° 49'W, elev. 3000 m. Cloud forest with abundant epiphytes, especially mosses, filmy ferns. Shrub 2 m. Corollas white. Female. 27 Aug. 1983. Solomon 10713 (US); Male. Solomon 10714 (US); 1.2 km E of Cotapata on road between Unduavi and Chuspipata. Cloud forest with Weinmannia, Clusia, Clethra and many Ericaceae. 16° 17'S, 67° 50'W. 3100 m. Shrub 1 m. Corollas white. Growing in shrubby ridge forest. Female. 26 June 1986. Solomon 15332 (US); Prov. Sud Yungas. 3 km E of Unduavi, on new road between La Paz and Chuspipata. Most common tree genera: Miconia, Oreopanax, Vallea and Clethra. 16° 17'S, 67° 53'W. 3300-3400 m. Shrub 3 m. Female. 2 July 1986. Solomon 15423 (US); Road from La Paz to Coroico, Puna area, S of Divide ca. 20 km from La Paz, 4000-4700 m. Flowers white. Male. 21 May 1980. D'Arcy and Bejarano 13836 (US); Road from Coroico to divide leading to La Paz. Flowers white, shrub. Male. 21

May 1980. D'Arcy and Bejarano 13881 (US); Sur Yungas. Hacienda "La Florida". 6 ft. Male. 26 Mar. 1920. Holway and Holway 661 (US); Cochabamba: Prov. Chapare. 14.7 km N of Colomi (junction of the road to Candelaria) on road to the Chapare. Represa de Corani. elev. 3300. Low shrubs, with Polylepis on steep slopes and Baccharis on more level areas. 17° 15'S, 65° 53'W. Shrub 1.5 m. Foliage resinous. Female. 19 Oct. 1985. Solomon 14428, Female 14429 (US).

Three additional specimens have generally smaller leaves and more diffuse inflorescences with fewer heads, but these seem to be the same species.

BOLIVIA: LA PAZ: Prov. Murillo, 20.3 km N of (below) dam at Lago Zongo. elev. 3250 m. Shrubby low forest. Heavily disturbed and grazed. 16° 10'S, 68° 08'W. Shrub 3 m. Male. 5 Mar. 1983. Solomon 9730 (US); 20.8 km al norte de La Cumbre del valle del Río Zongo. Bosque bajo (3-5 m), tupido, nuboso, con Chusquea, Solanum, Myrsine y Barnadesia. 3200 m, Arbusto, 2 m. Female. 20 Feb. 1987. Solomon 16128 (US); Valle del Río Zongo. 22.9 km al norte de las cumbre. Bosque bajo, nuboso con Weinmannia, Clusia, Myrica y Chusquea. 16° 09'S, 68° 07'W. 3000 m. Arbusto, 2 m. Male. 8 Mar. 1987. Solomon 16271 (US).

The new species seems common in central Bolivia, but no previous description seems to apply to the this entity. Part of the reason may be confusion with other members of the genus. The leaves closely resemble those of B. nitida (R. & P.) Pers. in size and shape, and differ from those of the related B. cassinifolia DC. The former Andean species does occur in Bolivia and the latter Brazilian species has been reported from the country. Both differ from the new species by their lateral rather than terminal inflorescences. Both also differ by the recessed rather than prominent upper surface of the midvein. The Brazilian species differs further by the apparent consistent absence of teeth on the leaves. The new species was initially determined as B. mandonii Sch. Bip. nom. nud., but a photograph of Mandon 199, represented as a potential type of the latter, shows a recessed upper surface of the midvein. The unpublished species is presently considered to be B. conwayii Rusby, a species that usually has longer leaves with larger more numerous teeth. The latter also has a small pubescence on the leaf surface not seen in B. buchtienii. Female plants of the Rusby species typically have much denser fasciculate inflorescences with smaller heads and narrower involucre bracts.

Baccharis solomonii H. Robinson, sp. nov.

Plantae scandentes ad 4 m longae. Caules brunnei vel rubrescentes teretes striati glabri vel indistincte breviter puberuli minime decurrentiter alati. Folia alterna, petiolis 4-8 mm longis; laminae oblongo-ovatae plerumque 2-7 cm longae et 0.8-2.5 cm latae margine superne sensim multo et dense mucronato-serrulatae apice anguste acuminatae supra basem valde et longe ascen-

dentiter trinervatae supra et subtus glabrae, nervis primariis supra sublaevibus subtus prominentibus, nervulis prominulis subtus valdius prominulis. Inflorescentiae in ramis terminaliter paniculatae in ramis primariis foliosae, ramulis e folio axillaribus recte patentibus; ramis femineis plerumque a basis ramosae ramulosae, ramulis plerumque unicapitatis interdum 2-4-capitatis; ramis masculinis base plerumque non ramosis et multo subulate bracteiferis distaliter dense paniculatis, ramulis plerumque 2-5-capitatis; ramulis ultimis 2-4 mm longis minute bracteiferis. Capitula feminea ca. 6 mm alta et 4-5 mm lata; bractee involucri ca. 40 ca. 5-seriatae exteriores ovatae vel oblongae 1.5-2.5 mm longae et ca. 1 mm latae interiores lineares vel anguste lineares 3.5-5.0 mm longae apice breviter acutae margine minute dense puberulo-fimbriatae extus glabrae; flores ca. 30 in capitulo; corollae albae tubulares ca. 2 mm longae extus minute puberulae; achaenia immatura prismatica ca. 1 mm longa glabra; setae pappi albae ca. 45 ca. 4 mm longae apice non latiores. Capitula masculina ca. 6.0-6.5 mm alta et 4 mm lata; bractee involucri ca. 18 ca. 3-seriatae ovatae vel lanceolatae 1.5-3.0 mm longae et 0.7-1.0 mm latae apice breviter acutae margine distaliter minute puberulo-fimbriatae extus glabrae; flores ca. 12 in capitulo; corollae albae ca. 4.5 mm longae, tubis anguste tubulares 2 mm longis apice minute sparse puberulis, faucibus breviter infundibularibus ca. 0.7 mm longis, lobis lanceolatis ca. 2 mm longis et base 0.4 mm latis extus glabris; thecae ca. 0.5 mm longae; appendices antherarum lanceolatae ca. 0.45 mm longae et base 0.15 mm latae; achaenia annuliformia; setae pappi albae persistentes ca. 30 plerumque 3-4 mm longae inferne saepe contortae distaliter leniter scabridiores; grana pollinis in diametro ca. 23-25 μ m.

TYPE: BOLIVIA: La Paz: Prov. Sud Yungas. 3.2 km S of (below) Chuspipata on road to Chulumani, elev. 2900-3000 m. Cloud forest, disturbed, with *Brunellia*, *Clusia* and *Weinmannia* 16° 18'S, 67° 49'W. Scandent, up to 4 m. Corollas white, foetid smelling. Male plant. 28 Sept. 1985. *Solomon and Nee 14257* (Holotype US). PARATYPES: BOLIVIA: La Paz: Prov. Nor Yungas. 1.4 km SE of Chuspipata, on road to Chulumani. 16° 18'S, 67° 49'W, elev. 3000 m. Cloud forest with abundant epiphytes, especially mosses, filmy ferns. Scandent shrub, 4 m heads white. Female plant. 27 Aug. 1983. *Solomon 10707* (US); PERU: Dept. Puno: Prov. of Carabaya. Ollachea-Asientos trail. Hillside with sphagnum moss and shrubs. Liana. Inflorescence white. Male plant. 18 Aug. 1980. *Boeke and Boeke 3107* (US).

The new species was first seen from Peru, but the Boeke specimen was inadequate for description. The two Bolivian specimens represent both sexes although the female plant has immature achenes. The species belongs to the group containing *B. jelskii* Hieron., *B. decussata* (Klatt) Hieron. and *B. saliens* Rusby, but the three relatives all have strong pubescence. The leaves of the new species also are distinct in their more elongate tips.

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Baccharis libertadensis (S. B. Jones) H. Robinson, Holotype, Univ. of Georgia Herbarium. Photos by Victor E. Krantz, Staff Photographer, National Museum of Natural History.



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BOLIVIA

ASTERACEAE

Baccharis

Dept., La Paz, Prov. Sud Yungas, 3.2 km
N of (below) Chusipata on Road to
Chusipata. Elev. 2400-2600 m. Clad
Tapered, divaricate, with terminal
cymes and verticillate
18*18 cm, 17*45 cm.

Branchlets up to 4 m. Corollas white,
faintly smelling.

UNITED STATES

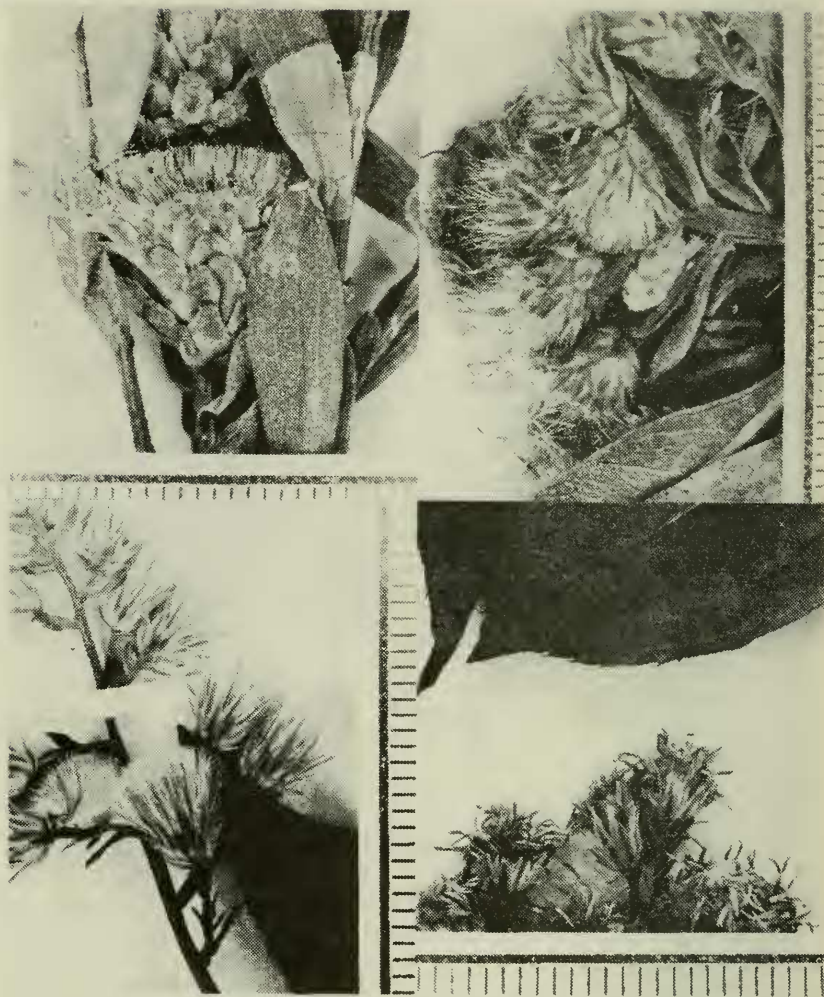
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J. C. Robinson & M. Nees 14257
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Baccharis solomonii H. Robinson. Holotype, United States
National Herbarium.



Baccharis species, enlargements of heads. Upper left: B. libertadensis, holotype, female. Upper right: B. buchtienii, holotype, female. Lower left: B. solomonii, holotype, female. Lower right: B. solomonii, paratype Solomon 10707, male.